THE MINERAL INDUSTRY OF

HUNGARY

By Walter G. Steblez¹

In 1994, Hungary remained a modest producer of fossil fuels, industrial minerals, and metals. Bauxite was the only major mineral produced in Hungary that was significant in terms of European mineral production. However, the country's production of primary aluminum had virtually ceased, owing to Hungary's energy shortages. Hungary also continued to produce coal, natural gas, and petroleum, but in amounts sufficient to satisfy only about one-half of the country's annual energy needs.

The country's transition from central economic planning to a market-based economic system necessitated corresponding structural changes in the economy. Among the major changes that were required by the transition process was the gradual severance of state subsidies to industries and other commercial enterprises. With respect to Hungary's minerals industries, the abolition of subsidies forced the relevant enterprises not only to rely increasingly on markets for continued operations but also to tolerate increasing levels of unemployment, declines of production, and possible bankruptcy.

For most years during the 1990-94 period of transition, the country's economic performance and industrial production showed significant downturns; however, it was not certain that market economy-based accounting procedures were used to make these evaluations. Nevertheless, compared with that of 1993, the reported increase in the country's industrial output in 1994 of about 9% was noteworthy.²

The chief events in the country's minerals industries in 1994 included the participation by U.S. companies in Hungary's petroleum exploration program, and the entry of the Phelps Dodge Corp. of the United States into Hungary's market with the formation of a joint venture to produce carbon black.

Government Policies and Programs

The Government of Hungary remained committed to the process of restructuring and denationalizing its state-owned industrial assets. By yearend 1994, almost one-half of Hungary's enterprises had been denationalized and/or brought into the private sector and, reportedly, the Government would increase its efforts to accelerate the privatization of the country's state-owned enterprises. With respect to the Hungary's minerals industry, the Government's plan has been to decouple all branches of this industry from state control except those considered to be of strategic

importance to the country, namely, the Hungarian Oil and Gas Co. (MOL) and the Mecsek Ore Mining Co., Hungary's uranium ore mining and processing firm.³ Recently, enterprises such as the Tatabanya coal mine were transferred to the private sector of the economy.

Environmental Issues

The overall neglect of the environment by Hungary's former Government from 1948-89 resulted in considerable degradation of the country's air and, in some cases, ground and surface waters from industrial point sources, such as chemical plants, mines, steel mills, and refineries. The use of high-sulfur brown coals and lignites at the country's thermal electric power stations heavily contributed to high concentrations of sulfur dioxide, nitrous oxide, and suspended solid particulate. The draft of the new environmental protection law, titled, "the Basic Laws on the Environment," reportedly would establish regulations on environmental protection, conservation, and regional development. Government agencies that have been responsible for enforcing existing regulations concerning environmental protection included the Ministry of the Environment and Regional Planning (KTM) and the Hungarian Mining Office (MBH). KTM could help only in the enforcement of existing environmental protection legislation prescribed by other ministries of the Government. With respect to mining and minerals, Hungary's Ministry of Industry and Commerce had the primary responsibility for establishing environmental regulatory standards. The chief responsibility of MBH was that of a certifying agency. Reportedly, MBH could review only technical developmental and operational plans, which had to include provisions concerning environmental protection and land restoration by responsible entities, and oversee their compliance.

Production

In recent years, Hungary's generally declining trend in minerals output largely was the result of the continuing structural adjustment to an emerging market-based economic system. The country's commodity production trends have been showing a growing correspondence to market demand as opposed to industrial output during the period of central economic planning, when production targets were set without reference to costs, efficiency, and other economic variables.

(See table 1.)

Trade

The Republics of the former Soviet Union (FSU) remained Hungary's major mineral trading partners. In 1993, for which more complete trade returns were available, the FSU continued supply Hungary with almost 100% of its import needs of natural gas and petroleum. Additionally, in 1993, 33% of Hungary's imports of coal (all grades), iron ore, pig iron, ferromanganese, and ferrosilicon from the FSU amounted to 33%, 92%, 37% 49%, and 58% of total imports of these commodities, respectively. However, the overall volume (and value) the country's foreign trade had shifted from its former centrally planned economy partners of the Council of Mutual Economic Assistance to the industrial countries of Western Europe.⁴

Structure of the Mineral Industry

The information provided in table 2 lists the names of administrative bodies as well as subordinate production units of the main branches of the country's mineral industry. (See table 2.)

Commodity Review

Metals

Aluminum and Bauxite.—Despite the leading position of bauxite mining and alumina refining in the country's mineral industry, the future of this sector remained uncertain in 1994. Hungary was no longer a producer of primary aluminum because of energy cost considerations and produced mainly secondary metal at its Inota facility at about 27,000 to 30,000 metric tons per year (mt/a). Since the start of Hungary's transition to a market economy, issues such as environmental pollution and production costs for producing bauxite, alumina, and aluminum, and world prices for aluminum had become constraining factors to these operations in contrast to past years. The continuation of the post-Soviet Russian/Hungarian alumina for aluminum agreement apparently was a major reason these operations were sustainable, although the quantities involved in the alumina for aluminum exchange in 1994 were significantly lower than had been negotiated in past years. On the other hand, the aluminum fabricating industry that developed as a natural extension to the country's bauxite mining and alumina refining operation proved relatively effective, generating significant hard-currency export revenues in the late 1980's. During the country's economic transition period, Hungalu's aluminum fabricating operations became attractive to foreign investors, which resulted in a joint venture with Alcoa of the United States known as Alcoa-Kofem Kft. Alcoa held 51% of the equity in the joint venture, while Hungalu controlled the balance of the shares in the joint venture. Alcoa-Kofem Kft. produced finished and semimanufactured aluminum products, mainly for export. In 1994, about 80% of Hungary's total output of finished and semimanufactured aluminum products reportedly was produced at Alcoa-Kofem's Szekesfehervar plant and sales during the year amounted to 118,000 metric tons.⁵ In 1994, the company announced plans to develop new facilities that would include modernization of the foundry, and pressing and rolling equipment at Szekesfehervar. The perspective investments were valued at about US\$27 million.⁶

Copper.—Hungary continued to maintain facilities at the Recsk copper deposit, despite failure in recent years to find sufficient capital to develop the site. Mining at Recsk began in 1926, when mineralization relatively close to the surface was exploited to produce copper and gold. Mining ceased in 1976 following the depletion of reserves of ore. Subsequent geological investigations at Recsk have revealed very large, deep-lying copper and polymetallic mineralizations in a 10-square-kilometer (km²) area. Mineral resources at Recsk were determined at about 175 million metric tons (Mmt) of copper ore, grading 1.12% copper, and 20 Mmt of polymetallic ore, grading 4.22% lead and 0.93% zinc, together with smaller quantities of gold, molybdenum, and silver.

Iron and Steel.—The major issue concerning the steel industry involved a plan by the Government to merge the Ozdi Acelmu Rt. (Ozd) and Diosgyoer Stock Co. (Dimag), two of the country's three major steelworks. Government's merger plan for Ozd and Dimag was part of the country's industrial restructuring process during the transition period to a market-based economic system. Also, the plan was in accord with guidelines that were established at yearend 1993 by Idom of Spain, consultants funded by the European Union (EU). Reportedly, Idom's recommendations included the substitution of open hearth operations with electric arc furnaces to take advantage of Hungary's significant iron and steel scrap resources. The combined Ozd-Dimag operations would specialize in the production of crude steel and finished steel products, but with newer production technologies and lower output capacities to give both enterprises sufficient flexibility to meet the demands of both the domestic and export markets. To maintain solvency at Ozd, Dimag, as well as at the Cepel tube mill and the Salgotarjan steel fabricating enterprise, the Government of Hungary reportedly approved a US\$13.6 million loan in April 1994 to these enterprises during the restructuring period.7

Industrial Minerals

Most industrial minerals in Hungary, apart from cement, were produced under the auspices of the Hungarian Ore and Mineral Co., a partially denationalized state-owned enterprise. Major industrial minerals mined in Hungary included bentonite, diatomite, dolomite, kaolin, manganese (nonmetallurgical), perlite, silica sand, and zeolite. The production of these commodities satisfied both the country's domestic and export requirements. Hungary's export trade in industrial minerals was handled by Mineralimpex (Hungarian Trading Co. for Oils and Mining Products) with offices in Austria, Germany, and Switzerland.

Hungary's industrial minerals sector also had the most success with respect to restructuring and attracting foreign investment capital. By yearend 1994, a substantial portion of the country's cement industry was capitalized through foreign investment, largely from Germany and Switzerland. In January, Phelps Dodge Corp. of the United States announced the formation of a joint venture with Hungary's Tiszai Vegyi Kombinat, the country's major petrochemical producer. The joint venture, Columbian Tiszai Carbon Ltd. (CTC), would produce about 50,000 mt/a of carbon black, an essential component in the production of tires and other rubber goods. CTC's production of carbon black would satisfy all of Hungary's domestic needs for this material and the balance, or 70% of output, would be exported.

Mineral Fuels

The major development in Hungary's mineral fuel sector in 1994 was the concessions awarded by the Ministry of Industry and Trade to several U.S. petroleum and natural gas exploration companies that would allow them to explore and drill for natural gas and petroleum until 2030. Blue Star Corp. of the United States reportedly was awarded concessions near Nagylengyel, totaling 346 km², and near Inke, totaling 887 km². Both concession areas are in southwestern Hungary. Coastal Oil and Gas Corp., also of the United States, was awarded a concession totaling 888 km² near Igar, adjacent to Inke.8

Reserves

Taking into consideration Hungary's transition to a market economy system, the country's mineral resources would have to be reevaluated from the perspective of market economics. Reserves, as defined by most market economies, are those mineral deposits that can be mined at a profit under existing conditions with existing technology. In countries that were former members of the Council for Mutual Economic Assistance, including Hungary, the previous policies for centrally planned industrial development often had more to do with political rather than economic considerations. The chief principle of industrial development was to attain self-sufficiency at all costs. Centrally planned directives to discover exploitable resources may have resulted in possible overevaluations of collected field data. Consequently, it could take Hungary a number of years to determine its real

mineral reserves from a market economy standpoint.

Infrastructure

Railways carried a substantial amount of Hungary's mineral freight. The railroad network consisted of 7,779 kilometers (km) of track, of which 7,513 km was 1.435-meter standard-gauge track. According to the most recent data, in 1992, of the total volume of freight carried in Hungary by railroads, the transport of fuels constituted 29.7%; ores and other mining products, 9.5%; construction materials, 5.5%; and iron and steel and nonferrous metal products, 9.3%.

Hungary also had maritime port access on the Baltic Sea in Poland at Gdansk and Gdynia, as well as at Rostock in the former German Democratic Republic. Major ports on the Danube were at Budapest and Dunaujvaros. In 1992, of the total marine freight transported, mineral fuels constituted 10.1%; ores and mining-related products, 18.1%; construction industry's products, 44%; and iron and steel products and nonferrous metals, 14.5%.

Hungary's highways had a total length of 130,000 km, of which 28,701 km was part of the national highway system. In 1992, of the total freight carried by the country's highway system, the transport of mineral fuels constituted 7.8%; ores and mining-related products, 57.6%; the construction industry's products, 16.3%; and iron and steel and nonferrous metals, 1.3%.

The country's pipeline network consisted of a 1,204-km line to carry crude oil, a 600-km line for refinery products, and a 3,800-km pipeline for natural gas. In 1992, mineral fuels carried by the country's pipelines constituted 80.8% of total carriage by pipeline.

The total net installed electric generating capacity as of 1990 amounted to 6,956 megawatts (MW), of which 4,750 MW was rated by thermal electric generating plants, 1,760 MW by nuclear powerplants, and 46,000 MW by hydroelectric power facilities.

Outlook

Given the Hungarian Government's objective to bring the country into conformity with standards that are current within European Free Trade Union and the EU, greater investment can be envisaged for the reconstruction and modernization of the country's infrastructure: transportation networks, commercial buildings, and private and publicly owned dwellings, etc. To accommodate most of these objectives, the country's industrial minerals and construction materials sectors would increase in importance as the demand for cement, quarry products, and other industrial minerals increases. To respond to growing domestic market demands for structural steels, as well as the Government's plans to increase both energy efficiency and minimize environmental degradation, the country's steel industry may adopt the more

energy-efficient minimill approach, rather than rely on integrated steel mills.

Major Source of Information

Iparugyi Miniszterium (Ministry of Industry) Budapest

Major Publications

Magyar Aluminium (Hungarian Aluminum), Budapest, monthly.

Statisztikai Evkonyv (Statistical Yearbook), Budapest. Statisztikai Havi Kozlemenyek (Monthly Statistical

Bulletin), Budapest.

¹Text prepared Aug. 1995.

²Monthly Bulletin of Statistics 1995 No.5, (Budapest), p. 1.

³Mining Journal (London), Feb. 4, 1994, p. 90.

⁴Kulkereskedelmi Statisztikai Evkonyv (Statistical Yearbook of External Trade, 1993), (Budapest), 1994, pp. 81-129.

⁵Mining Journal (London), Mining Annual Review 1995, p. 193

⁶SWB EEW/0335. June 2, 1994, p. WA/9, from MTI News (Budapest) 0747 GMT May 26, 1994.

⁷Mining Journal, (London), Apr. 22, 1994, p. 291.

⁸Journal of Commerce, Aug. 17, 1994, p. 5-B.

${\bf TABLE~1} \\ {\bf HUNGARY: PRODUCTION~OF~MINERAL~COMMODITIES~1/~2/} \\$

(Metric tons unless otherwise specified)

	1990		1991	1992	1993	1994 e/
METALS						
Aluminum:	_					
Bauxite, gross weight thousand to	ons 2,5	60	2,040	1,720	1,560	830
Alumina, gross weight, calcined basis	do8	326	653 r/	545 r/	421	179 4/
Metal:						
Primary	75,2	200	63,300	26,900	28,000	30,500
Secondary e/	30,0	000	32,000	20,000	25,000	3,000 4/
Total e/	105,2	200	95,300	46,900	53,000	33,500
Copper, metal:						
Smelter, secondary e/		.00	100	100	100	100
Refined including secondary	12,8	800	12,000 e/	12,000	11,000	11,000
Gallium, metal e/ kilogra	<u>4,1</u>	.00	3,600	3,500	2,500	4/
Iron and steel:						
Pig iron:						
For steel industry thousand to		700	1,310	1,180	1,410 r/	1,590 4/
	do	15	4	r/	r/	
		15 r/	1,414 r/	1,180	1,410	1,590
Ferroalloys, total e/ 5/	12,0	000	8,500	8,500	8,500	8,000
Steel:						
Crude thousand to		060	1,930 r/	1,540 r/	1,750 r/	1,940 4/
	do. 2,1	.80	1,540	1,670 r/	1,870 r/	2,120 4/
Manganese ore:						
Run of mine:						
Gross weight	117,0		54,800	32,000	38,000	40,000 4/
Mn content e/	22,0	000	10,000	5,800	6,800	7,200
Concentrate:						
Gross weight	60,0		30,000	18,000	59,000	25,000
Mn content e/	18,0		9,300	5,400	17,500	7,500
Vanadium, metal e/		800	200	200	200	200
Zinc: Metal, smelter, secondary e/	1,3	800	1,200	1,000	1,000	4/
INDUSTRIAL MINERALS						
Cement, hydraulic thousand to	ons 3,9	930	2,530	2,240	2,530	2,810 4/
Clays:						
Bentonite:		.00	10 100	22.000	0.400 /	14.700.4/
Raw	36,6		18,100	23,000	9,400 r/	14,700 4/
Processed Value and analysis			14,100	15,000	8,000 r/e/	12,000
Kaolin, raw and washed		000 r/	19,000 r/	7,000 r/ 50,000 r/	15,000 r/	15,000
Gypsum and anhydrite e/ Lime, calcined thousand to	112,0	331	110,000 571	50,000 f/ 507 r/	22,000 4/ 476 r/	25,000 464 4/
		143 r/	261 r/	307 f/ 152 r/	237 r/	250
Perlite	93,0		87,800	83,000	80,000	85,000 4/
Refractory materials, n.e.s.:		,00	87,800	85,000	80,000	65,000 4/
Chamotte products thousand to		77	28	19	20	20
	do.	29	9	41	3	5
Sand and gravel:	<u>uo.</u>	2)	,	41	3	3
Gravel thousand cubic met	tore 5.5	60	2,970	3,790	3,170	3,000
Sand:	5,0	,00	2,970	3,790	3,170	3,000
	do. 4	100	200	200	200	200
		543	181	184	15	12 4/
		705	600	660	260	308 4/
Sodium compounds:	<u>uo.</u>	03	000	000	200	300 4/
Hydroxide (caustic soda)		000	170,000	139,000 r/	130,000 r/	132,000 4/
Sulfate e/			6,000	6,000	6,000	6,000
Stone:		,00	0,000	0,000	0,000	0,000
Dimension, all types thousand to	ons 4,0	30	3,350	3,650	4,030	4,000
, 51		78	454	298 r/	644 r/	600
		570	4,330	3,700 r/	3,920 r/	4,000
		31	4,330 1 r/	3,700 1/ r/	3,920 l/ r/	7,000
Sulfur:		J 1	1 1/	1/	1/	
From pyrite e/		000	900	900	800	800
Byproduct, elemental, all sources e/			8,000	8,000	8,000	8,000
Total e/			8,900	8,900	8,800	8,800
Sulfuric acid	244,0		134,000 r/	94,900 r/	71,300 r/	83,700 4/
Talc e/			10,000	10,000	10,000	10,000
See footnotes at end of table			- 5,000	-0,000	-0,000	-0,000

TABLE 1--Continued HUNGARY: PRODUCTION OF MINERAL COMMODITIES 1/2/

(Metric tons unless otherwise specified)

Commodity 3/	1990	1991	1992	1993	1994 e/
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Bituminous thousand to	ns 1,740	1,700	1,300 r/	942 r/	1,030 4/
Brown	o. 10,400	9,950	7,630 r/	6,600 r/	5,710 4/
Lignite	o. 5,470	5,330	7,020 r/	5,050 r/	6,760 4/
Total	o. 17,610	16,980	15,950	12,592 r/	13,500
Coke, metallurgical	564	611	719	643 r/	650
Fuel briquets de	o. 1,760	1,920	682	605 r/	410
Gas: Natural, marketed million cubic mete	rs 4,930	5,040 r/	5,060 r/	5,010 r/	5,900
Peat, agricultural use e/ thousand to	ns 65	65	65	65	65
Petroleum:					
Crude	_				
As reported de	o. 1,970	1,890	1,830	1,710 r/	1,600
Converted thousand 42-gallon barre	ls 13,200	12,700	12,200	11,400	10,700
Refinery products: 6/	o. 53,500	45,700	45,700	41,200	41,000

e/ Estimated. r/ Revised.

^{1/} Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown. 2/ Table includes data available through Mar. 1994.

^{3/} In addition to the commodities listed, diatomite and a variety of other crude construction materials such as common clays are produced, but available information is inadequate to make reliable estimates of output levels.

^{4/} Reported figure.

^{5/} Hungary is believed to produce some blast furnace ferromanganese.

^{6/} Excludes refinery fuel and losses.

${\it TABLE~2} \\ {\it HUNGARY:~STRUCTURE~OF~THE~MINERAL~INDUSTRY~FOR~1994} \\$

(Thousand of metric tons unless otherwise specified)

Comr	nodity	Major operating companies 1/	Location of main facilities	Annual capacity
Alumina		HUNGALU (Hungarian Aluminum Corp.)	Ajka Timfoldgyar plant, about 120 km	450
			southwest of Budapest, near Lake Balaton	
Do.		do.	Almasfuzito Timfoldgyar plant near the	350
		Czechoslovak border, 63 km northwest		
			of Budapest	
Do.		do.	Moson-Magyarovar plant, in northwest	75
			corner of Hungary, about 12 km from	
			Austrian and Czechoslavak border	
Aluminum, primary		do.	Inota plant, near Varpalota, 75 km	46
			southwest of Budapest	
Bauxite		HUNGALU:	Bakony District, extending roughly	
		Bakony Mining Enterprise	100 km northeast along Lake Balaton	1,500
Do.		Fejer County Mining Enterprise	Fejer County, Vertes District, about	1,060
			60 km south of Budapest	
Cement		Cement es Meszmuvek	Belapatfalva, near Miskolc, 125 km	1,200
			northeast of Budapest	
Do.		do.	Beremend, 45 km south of Pecs	1,100
Do.		do.	Hejocsaba, 150 km northeast of Budapest	1,600
Do.		do.	Labatlan, 20 km north of Tatabanya	500
Do.		do.	Selyp, 50 km north of Budapest	60
Do.		do.	Tatabanya, 80 km west of Budapest	500
Do.		do.	Vac, 50 km north of Budapest	1,200
Coal:		do.	vae, 50 km norm of Badapest	1,200
Bituminous and ligi	nite	Magyar Szenbanyaszati Troszt (MSZT)	Tatabanya and Oroszlany coal mining	8,900
Ditammous and ngi	inc	(Hungarian Coal Mining Trust).	region, 45 km west of Budapest	0,700
Do.		do.	Mecsek coal mining region, near Pecs	3,100
Ъ0.		do.	and Komlo, north of the Yugoslav border	3,100
Do.		do.	Borsod coal mining region, 130 km	5,200
D0.		do.	northeast of Budapest	3,200
Lianita		do.	Thorez opencast mine at Visonta,	7,000
Lignite		do.		7,000
M		O	80 km northeast of Budapest	1.00
Manganese		Orszagos Erc-es Asvanybanyak	Urkut manganese ore mines, 120 km	160
NT 1	.11. 1	(National Ore & Mineral Mines)	southwest of Budapest	152.000
Natural gas	million cubic feet	Hungarian Oil and Gas Co. (MOL)	Szeged and Algyo gasfields, southern	152,000
			Hungary	
Do.		do.	Hajduszoboszo gasfields, 180 km east	50,000
			of Budapest	
Do.		do.	Smaller gasfields: Szank, Kardoskut,	39,000
			Bekes, Berefurdo, and others	
Petroleum:		_		
Crude	million barrels	MOL	Szeged-Algyo field, near Romanian-	7
			Yugoslav border; 50% of total capacity	
Refined		Subsidiaries of MOL:		
Do.	do.			55
Do.	do.	Tisza Petroleum refining Co.	Leninavaros	22
Do.	do.	Zala Petroleum refining Co.	Zalaegerszeg	4
Steel		Dunai Vasmu (Danube Steel Works)	60 km south of Budapest	1,400
Do.		Ostag - Ozdi Acelmu Rt	120 km northeast of Budapest	700
Do.		Dimag - Diosgyoer Stock Corp.	Diosgyoer, 145 km northeast of Budapest	954

^{1/} All mining companies are Government owned.